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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/731,894	12/09/2003	Shinichi Nakamura	9319H-000619	4686
27572	7590	09/20/2005	EXAMINER	
HARNESS, DICKEY & PIERCE, P.L.C. P.O. BOX 828 BLOOMFIELD HILLS, MI 48303			HSIEH, SHIH WEN	
			ART UNIT	PAPER NUMBER
			2861	

DATE MAILED: 09/20/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/731,894

Applicant(s)

NAKAMURA, SHINICHI

Examiner

Shih-wen Hsieh

Art Unit

2861

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 14 June 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-11 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1 and 3-11 is/are rejected.
- 7) ☒ Claim(s) 2 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 14 June 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
- 1) ☒ Certified copies of the priority documents have been received.
  - 2) ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 12-9-03.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

## DETAILED ACTION

### *Priority*

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

### ***Claim Rejections - 35 USC § 103***

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Steinfield et al. (US Pat. No. 6,692,100 B2) in view of Sharma et al. (US Pat. No. 6,554,391 B1).

In regard to:

Claim 1:

Steinfield et al. teach:

A wiping unit for a liquid droplet ejection head, comprising a wipe-off unit having mounted thereon a pressing roller (280, fig. 7, it was called drive roller by Steinfield et al. functioning the same as the pressing roller in this application) to press a wiping sheet

(240, figs. 5 and 7, it was called web by Steinfield et al. functioning the same as the wiping sheet in this application) from below to a downward nozzle surface (45, figs. 2-4) of said liquid droplet ejection head (40, figs. 1-5), and a sheet feeding unit (see figs. 7 and 8) for feeding the wiping sheet through said pressing roller (280) such that said wipe-off unit is moved in a predetermined wiping direction parallel to said nozzle surface integrally with said sheet feeding unit to carry out a wiping operation while feeding the wiping sheet in a state in which the wiping sheet is pressed to said nozzle surface, refer to col. 12, lines 4-62 for sheet feeding; and col. 11, lines 43-53 for wiping the nozzle surface (45) by the movement of web (240).

The device of Steinfield et al. **DIFFERS** from claim 1 in that it does not teach:

wherein a cleaning liquid ejection member is mounted on said wipe-off unit so as to be positioned below a horizontal surface coincident with said nozzle surface and on a feeding side of the wiping sheet relative to said pressing roller in a state in which the wiping sheet is pressed to said nozzle surface.

Sharma et al. teach in their fig. 1, a cleaning mechanism (140), which contains a rotating disk (190) made of liquid absorbent material, which receives a cleaning liquid (300) sprayed onto the disk by a pump (36), which acts as the cleaning liquid ejection member in this application. The disk cleans an ink jet head (16). Although the disk is not a wiping sheet as in this application or the web as in the Steinfield et al.'s reference, however, its functions the same as the wiping sheet and the web with only different in shape, refer to col. 6, lines 43-49 and col. 7, lines 16-20.

Therefore it would have been obvious to a person having ordinary skill in the art at the time the invention was made to modify the device of Steinfield et al. to incorporate the cleaning mechanism, and specifically the pump (36) and the cleaning liquid (300), as taught by Sharma et al. into Steinfield et al.'s wiping system for the purpose of providing a chemical cleaning and lubrication between the wiping device (such as the disk in Sharma, or web in Steinfield et al. or sheet in the instant application) and the print head nozzle surface.

The device of Steinfield et al. as modified in view of Sharma et al. teaches:  
wherein the wiping sheet is fed from below to said pressing roller through a space between said pressing roller and said cleaning liquid ejection member, and  
wherein a cleaning liquid is ejected from said cleaning liquid ejection member toward the wiping sheet passing through the space. Note: because Sharma et al.'s cleaning liquid (300) is sprayed onto the surface of their disk (190) (refer to col. 7, lines 16-19). Therefore, in Steinfield et al.'s situation, the spray is onto the web from a place, which is a distance away the web. This distance away from the web forms the space in the instant application, where the web is fed from. And also when Steinfield et al.'s drive roller (280) associated with the web (240) press the nozzle surface (45) for wiping clean the surface (45), that is also the timing in Sharma et al.'s case, i.e., a wiping activation process is to begin, and the cleaning liquid is sprayed onto the wiping device.  
Therefore, The device of Steinfield et al. as modified in view of Sharma et al. teaches all of the two wherein portions in this claim.

Claim 3:

The device of Steinfield et al. as modified in view of Sharma et al. **DIFFERS** from claim 3 in that it does not teach:

wherein said wipe-off unit is freely movable vertically and, after the wiping of said nozzle surfaces, said wipe-off unit is moved back in a lowered state, in a direction opposite to the wiping direction.

Steinfield et al.'s wiping is achieved by moving the chassis (440, fig. 5) in direction indicated by double-headed arrow (447, fig. 5) while making an interference contact between the web and the nozzle surface (45). A situation where the wiping device is disposed a distance away from the ink jet head, and in a wiping situation, the wiping device has to be, e.g., raised up to get in contact with the surface of the head and after wiping retreating back to its original position is well known in the art. And in this situation, generally, a driving means is required to bring the wiping device moving between the contacting and non-contacting position with the surface of the head. Steinfield et al.'s wiping can be done along with a driving device, which drives the web upward for instance in order to gain contact with the surface of the head. Nevertheless, with or without a driving means in Steinfield et al.'s case the wiping function is carried out equally in either situation anyway, refer to MPEP 2144.03, In re Malcolm, 129 F.2d 529, 54 USPQ 235 (CCPA 1942).

Claims 4 and 5:

The wiping unit for a liquid droplet ejection head according to claim 1, wherein the wiping sheet is made of one of a sheet material of 100A polyester and a sheet material of 100% polypropylene (claim 4); and

The wiping unit for a liquid droplet ejection head according to claim 4, wherein a thickness of the wiping sheet is in a range of 0.4 mm to 0.6 mm (claim 5).

Rejection:

Claim 4:

Therefore it would have been obvious to a person having ordinary skill in the art at the time the invention was made to select a known material for the material of the wiping sheet, since it has been held to be within the general skill of a worker in the art to select such a known material on the basis of its suitability for the intended use, refer to MPEP 2144.07.

Claim 5:

Therefore it would have been obvious to a person having ordinary skill in the art at the time the invention was made to select a range of thickness of the sheet, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art, refer to MPEP 2144.05 II A.

Claim 6:

A liquid droplet ejection apparatus comprising:

said wiping unit for said liquid droplet ejection head as described in claim 1;

said liquid droplet ejection head; and

a moving table for moving said liquid droplet ejection head.

Rejection:

A carriage or carrier is generally used in a liquid droplet ejection apparatus for a liquid droplet ejection head(s) to be mounted therein so as to be reciprocated across the printing medium by a driving means and ejecting droplet onto the medium during its reciprocating movement to produce images on the medium. Although not explicitly indicated in Steinfield et al.'s invention, it would have been an obvious matter that a carriage or carrier is there. This carriage or carrier corresponds to the moving table in the instant application. Because no matter whatever it was called, it is a device, which carries the head to move back and forth.

Claim 7:

Steinfield et al. further teach:

a suction unit (444, fig. 5) arranged adjacently to said wiping unit (240) to suck function liquids from all of nozzles of said liquid droplet ejection heads; and

a moving mechanism for integrally moving said suction unit and the wiping unit to face the liquid droplet ejection head, refer to col. 11, lines 22-41. Please note that: (444) is only a capping station and is a part of a suction unit, which is known to a skill one in the art. A suction unit generally consists of a capping device connected to a suction pump. Although the suction pump is not taught in Steinfield et al.'s invention, a modification by adding suction pump(s) into Steinfield et al.'s invention could also being made possible, in this case, to maintain a healthy head is greatly enhanced, refer to MPEP 2144.03, In re Malcolm, 129 F.2d 529, 54 USPQ 235 (CCPA 1942).

Claim 8:



An electro-optical device which uses said liquid droplet ejection apparatus as described in claim 6, wherein a function liquid droplet is ejected from said liquid droplet ejection head to a workpiece to thereby form a deposition portion.

Rejection:

a recitation of the intended use of the claimed invention must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim.

Claim 9:

A method of manufacturing an electro-optical device, which uses said liquid droplet ejection apparatus as described in claim 6, comprising ejecting a function liquid droplet from the liquid droplet ejection head to a workpiece to thereby form a deposition portion.

Rejection:

This is a product-by-process claim, in which the product is the electro-optical device, and the claim defines the claimed product in terms of the process by which it is made. This claim is similar to those in claim 8 and is rejected on the basis as set forth for claim 8 discussed above.

Claim 10:

An electronic device which mounts the electro-optical device described in claim

8.

Rejection:

This claim is rejected on the basis as set forth for claim 8 discussed above.

Claim 11:

An electronic device, which mounts an electro-optical device manufactured by the manufacturing method of the electro-optical device as described in claim 9.

Rejection:

This claim is rejected on the basis as set forth for claim 9 discussed above.

***Allowable Subject Matter***

4. Claim 2 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

5. The following is a statement of reasons for the indication of allowable subject matter:

The primary reason for the allowance of claim 2 is the inclusion of the limitation of wherein in a movement section of said wipe-off unit positioned between each of said head rows, the feeding of the wiping sheet and the ejection of the cleaning liquid are suspended. It is this limitation found in this claim, as it is claimed in the combination that has not been found, taught or suggested by the prior art of record, which makes this claim allowable over the prior art.


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6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Shih-wen Hsieh whose telephone number is 571-272-2256. The examiner can normally be reached on 7:30AM -5:00PM.


If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dave Talbott can be reached on 571-272-1934. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

**SHIH-WEN HSIEH**  
**PRIMARY EXAMINER**

  
Shih-wen Hsieh  
Primary Examiner  
Art Unit 2861

SWH



Sept. 16, 2005